

CLAIMS

1. A device manufacturing method comprising:
 - providing an immersion liquid between a substrate and at least a portion of a projection system of a lithographic projection apparatus, wherein a non-radiation sensitive material is carried by said substrate, said non-radiation sensitive material being at least partially transparent to radiation and being of a different material than said immersion liquid, said non-radiation sensitive material being provided over at least a part of a radiation sensitive layer of said substrate; and
 - projecting a patterned beam of radiation, through said immersion liquid, onto a target portion of said substrate using said projection system.
2. A method according to claim 1, wherein said non-radiation sensitive material has a thickness and said radiation has a wavelength and said thickness is greater than said wavelength.
3. A method according to claim 1, wherein said non-radiation sensitive material has a thickness of at least 5 μm .
4. A method according to claim 3, wherein said non-radiation sensitive material has a thickness one of at least 10 μm and at least 20 μm .
5. A method according to claim 1, wherein said non-radiation sensitive material has a first refractive index and said immersion liquid has a second refractive index, and said first refractive index is within 0.2 of said second refractive index.
6. A method according to claim 5, wherein said first refractive index is one of within 0.1 of and substantially the same as said second refractive index.

7. A method according to claim 1, wherein said non-radiation sensitive material has a refractive index in the range of 1.0 to 1.7.
8. A method according to claim 1, wherein said non-radiation sensitive material is substantially insoluble in and unreactive with said immersion liquid.
9. A method according to claim 1, wherein a further protective material is present between said radiation sensitive layer and said non-radiation sensitive layer.
10. A method according to claim 1, wherein the non-radiation sensitive layer is of a thickness effective to substantially reduce the effect of at least one of bubbles and particles in said immersion liquid on the quality of the patterned beam impinging on the radiation sensitive layer.
11. A method according to claim 1, further comprising at least partly coating said radiation sensitive layer of said substrate with said non-radiation sensitive material.
12. A substrate for use in a lithographic projection apparatus, the substrate being at least partly covered by a radiation sensitive layer, the radiation sensitive layer being at least partly covered with a non-radiation sensitive material which is at least partly transparent to said radiation and being of a different material than an immersion liquid through which a patterned beam of said radiation of the lithographic projection apparatus is projected onto a target portion of said substrate.
13. A substrate according to claim 12, wherein said non-radiation sensitive material has a thickness and said radiation has a wavelength and said thickness is greater than said wavelength.
14. A substrate according to claim 12, wherein said non-radiation sensitive material has a thickness of at least 5 μm

15. A substrate according to claim 14, wherein said non-radiation sensitive material has a thickness of one of at least 10 μm and at least 20 μm .

16. A substrate according to claim 12, wherein said non-radiation sensitive material has a first refractive index and said immersion liquid has a second refractive index, and said first refractive index is within 0.2 of said second refractive index.

17. A substrate according to claim 16, wherein said first refractive index is one of within 0.1 of and substantially the same as said second refractive index.

18. A substrate according to claim 12, wherein said non-radiation sensitive material has a refractive index in the range of 1.0 to 1.7.

19. A substrate according to claim 12, wherein a further protective material is present between said radiation sensitive layer and said non-radiation sensitive layer.

20. A substrate according to claim 12, wherein said non-radiation sensitive material is substantially insoluble in and unreactive with said immersion liquid.

21. A substrate according to claim 12, wherein the non-radiation sensitive layer is of a thickness effective to substantially reduce the effect of at least one of bubbles and particles in said immersion liquid on the quality of a patterned beam impinging on the radiation sensitive layer.

22. A device manufacturing method comprising:

- providing an immersion liquid, between a substrate and at least a portion of a projection system of a lithographic projection apparatus, to a non-radiation sensitive material on said substrate, said non-radiation sensitive material, which is at least partially transparent to radiation, provided over at least a part of a radiation sensitive

layer of said substrate and having a thickness effective to substantially reduce the effect of at least one of bubbles and particles in said immersion liquid on the quality of a patterned beam impinging on the radiation sensitive layer; and

- projecting a patterned beam of radiation, through said immersion liquid, onto a target portion of said substrate using said projection system.

23. A method according to claim 22, wherein said thickness is greater than a wavelength of said radiation.

24. A method according to claim 22, wherein said thickness is at least 5 μm .

25. A method according to claim 24, wherein said thickness is one of at least 10 μm and at least 20 μm .

26. A method according to claim 22, wherein said non-radiation sensitive material has a first refractive index and said immersion liquid has a second refractive index, and said first refractive index is within 0.2 of said second refractive index.

27. A method according to claim 26, wherein said first refractive index is one of within 0.1 of and substantially the same as said second refractive index.

28. A method according to claim 22, wherein said non-radiation sensitive material has a refractive index in the range of 1.0 to 1.7.

29. A method according to claim 22, wherein said non-radiation sensitive material is substantially insoluble in and unreactive with said immersion liquid.

30. A method according to claim 22, wherein a further protective material is present between said radiation sensitive layer and said non-radiation sensitive layer.

31. A method according to claim 22, further comprising at least partly coating said radiation sensitive layer of said substrate with said non-radiation sensitive material.